WUE01-0052

A. Cover Sheet *(Attach to front of proposal.)*

1. Specify: ☐ agricultural project or ☒ urban project ☐ individual application or ☐ joint application

2. Proposal title—concise but descriptive: Water Reservoir Project (2 above ground steel storage tanks, water well, pumphouse, and associated water lines on a vacant, 2.56 acre site)

3. Principal applicant—organization or affiliation: City of Westminster, Water Department

4. Contact—name, title: Gary Heffelfinger, Public Works Manager Water

5. Mailing address: 14381 Olive Street, Westminster, CA. 92683-5012

6. Telephone: 714 895-2876

7. Fax: 714 373-5328

8. E-mail: garyheff@ci.westminster.ca.us

9. Funds requested—dollar amount: $ 6,500,000

10. Applicant cost share funds pledged—dollar amount: $ 5,100,000

11. Duration—(month/year to month/year): 7/01 to 12/02

12. State Assembly and Senate districts and Congressional district(s) where the project is to be conducted: State Assembly District 68, State Senate District 34, 45th Congressional District

13. Location and geographic boundaries of the project: Southeast corner of Hazard Ave. and Hoover Street in Westminster Memorial Park, North bound by Orange County Flood Control Channel, West bound by storm water detention basin

14. Name and signature of official representing applicant. By signing below, the applicant declares the following:
- — the truthfulness of all representations in the proposal;
- — the individual signing the form is authorized to submit the application on behalf of the applicant;
- — the applicant will comply with contract terms and conditions identified in Section 11 of this PSP.

Gary Heffelfinger *(printed name of applicant)* 2/12/01 *(date)*

Gary Heffelfinger *(signature of applicant)*

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EXECUTIVE SUMMARY

Project Description

Following the City's disastrous loss of the only two water storage facilities, 10 million gallon total capacity, the City of Westminster Public Works Department is proposing to construct two above ground, welded steel water storage tanks, a water well, a pump house, and associated water lines on a vacant, 2.56-acre project site. The storage project will reduce the City's CALFED imported water peak requirement, improve water quality and energy efficiency, and decrease dependency on imported water.

Each of the two water tanks will have a maximum capacity of approximately 8 million gallons of water and will rest on concrete ring walls. The project passed 50 percent design in October 2000 and will be completely designed by April 2001. The site has been purchased, graded, and surcharged in preparation for a summer construction start.

The proposed water well will be City of Westminster Well 11, and will be the supply well for the new water storage tanks. The new well will consist of stainless steel, 16-inch casing, to a depth of approximately 1,000 feet below ground surface, a below ground pump, and an above ground electric, 200-300 horsepower pump motor. The motor will be placed exposed on a 6'x 6' concrete platform and may have a height of up to 10 feet. It is projected that Well 11 will produce approximately 2,000 gallons of water per minute.

The pump house is designed as a concrete block structure with a floor area of approximately 3,000 square feet, and a tile or metal roof. It will accommodate 4-5 booster pumps, an emergency power generator (either diesel or propane fueled), and a disinfection room with a chlorination system. The booster pumps will pump water from water tanks to the City's water distribution system. The chlorination system will be located in a disinfection room. The chlorination plant will consist of an electric generator that transforms food-grade salt into sodium hypochlorite, which will be fed into the discharge water lines leaving the pump house.

Also included in the proposed project are several on and off-site underground water lines. One underground water line will connect the easterly water tank with the westerly tank. Another water line will connect the westerly water tank with the booster pumps in the pump house. Two water discharge lines will emanate from the booster pumps and feed into the municipal system: The first discharge line will be routed to Hoover Street and run north to connect with the existing water line on Hazard Avenue. The second discharge line will also be routed to Hoover Street and run north to Hazard Avenue; it will continue on Hazard Avenue to link up with the water main in Beach Boulevard. The latter line is needed to create adequate system-wide water pressure. An additional water line will be built to connect the water main in Hoover Street with one of the water tanks. This line will function as a supply line for the water tanks.

Methods

The methods for the equipping of a new well, construction of a booster pump station, two 8 MG above ground steel tanks at the Hoover Street and Hazard Avenue site, and the transmission pipelines on Hazard Avenue are as follows:

Preliminary Engineering and Final Design

- Project Management, administration, progress meetings, and quality control
- Permits and utilities research
- Aerial and topographic survey
- Soil corrosion study and cathodic protection system design
- Hydraulic modeling
- Preliminary design criteria development
- SCADA integration, metering and station automation / Supervisory Control and Data Acquisition system
- Surge analysis / incorporate the water system information into a computer model
- Final design / prepare construction drawings; 2,600 feet of transmission pipelines, two 8.0 MG tanks, booster station and equipping of a new well, well pump and motor, submit construction drawings to city for review and comments
- Permit applications
- Final construction contract documents
- Bid assistance, review, and evaluation services

Support Services During Construction

- Assist City in conducting pre-construction conference with the contractor
- Contractor's Submittals Review: review, comment, and approve the contractor's shop drawing and schedule submittals
- Contract documents interpretation
- Assist City in administrating the construction contract
- Assist in negotiation and preparation of change orders
- Furnish resident engineering services by a project representative during the 400-day construction period.
- Project management and coordinate meetings
- Facility testing and startup assistance
- Record drawings / review contractor's marked-up set of "as built" drawings

City Furnished Services

- Legal description for the project site
- Environmental documents and clearances
- Geotechnical engineering report and additional investigations
- Access to the site
- City's SCADA system information

- Field data, maps, utility plans, record drawings, City standard drawings and specifications
- Acquire necessary right-of-way, if any, for construction
- Bid advertisement and City review of bond and insurance documents
- Permit fees
- Additional geotechnical investigations and reports
- Geotechnical observations by a geotechnical engineer
- Available survey and topographic maps.

Objectives

The main objectives of the Water Reservoir Project are as follows:

- Reduce dependence on imported water from the Bay-Delta
- Reduce peak period flow requirements from Bay-Delta
- Provide City with operational flexibility and local control
- Maintain or provide the desired pressure in the distribution system
- Compensate for loss of City's two water storage facilities and provide a reservoir to store good quality water from any source, 15.8 million gallons through 2020 buildout.
- To take full advantage of MWD's "Seasonal Storage Program", maximizing cost savings and ultimately passing it on to consumers
- Provide a reserve capacity for fire emergencies, which is highly recommended by the Insurance Services Office (ISO)

WATER ISSUES INVOLVED

The Water Reservoir Project is consistent with local, regional, and Bay-Delta State objectives for cost-effective solutions for water use efficiency and conservation. In providing for reservoir storage capacity the project will reduce irrecoverable losses and improve water quality.

Locally, the project will provide for increased operational flexibility and local control of City water supply. Having water storage capacity is essential for water conservation programs outlined by the Best Management Practices in Westminster's Urban Water Management Plan. One of the main objectives of the project is to maintain or provide for the desired pressure in the water distribution system. This objective corresponds to a potential Best Management Practice envisioned by the California Urban Water Conservation Council (distribution system pressure regulation).

The Metropolitan Water District of Orange County is working with the Metropolitan Water District of Southern California to increase water supplies through recycling, groundwater development, desalination and conservation. These programs will lessen the region's need for imported water and protect against water shortages. The Water Reservoir Project will specifically increase dependency on groundwater development and decrease dependency on imported water sources.

In coordinating with MWDOC and MWD for water use efficiency and conservation projects, the Water Reservoir Project will support the CALFED process in seeking to solve the environmental and water supply problems of Northern California's Delta region.

NEED FOR WATER RESERVIOR

The City's water system had reservoir storage capacity of 10 million gallons in two 5 million tanks. On September 21, 1998, the 32-year old Hefley Square tank ruptured as a result of construction deficiencies. As a precautionary measure, the other 5 million-gallon tank was removed from service because it was of similar construction.

Water reservoir storage generally consists of an operational component and a fire reserve component. Water is stored to help equalize pumping rates over the day to equalize the supply and demand of long periods of high consumption, and to furnish water for such emergencies as fire fighting or accidental breakdown. Following the loss of City's two water storage tanks, this project will compensate for the loss and restore water storage capacity.

Montgomery Watson Americas, Inc., a global environmental engineering, construction, technology, and management company, was contracted by City to conduct a study and submit a Water Master Plan Update to Westminster Water Department. As a result of that study, Montgomery Watson Americas, Inc., has recommended that City have modest storage capacity for system reliability, 15.8 million gallons through buildout.

Operational Component:

- Allows for increases in groundwater dependency, reducing Bay-Delta needs in the high peak demand season.
- Problems with wells can be overcome by pumping more water to tanks at night during low usage to provide for peak needs the next day.
- Using a booster station, the reservoirs will provide the necessary pressure to maintain and provide desired system pressure.
- Under MWD's "Seasonal Storage Program", water will be taken from MWD lines during the day directly into the system, and at night when demand is low, storing water to be used the next day / savings in purchased water will be passed on to consumers.
- Water in storage tanks will provide a longer detention time for effective chlorination, serve as a sand trap, be mixed in to provide for water that is more uniform in quality, and prolong the useful life of low capacity wells, only using them during sustained peak flow.

Fire Reserve Component:

- This reserve capacity for fire emergencies is highly recommended by the Insurance Services Office (ISO), which grades cities upon their fire defense facilities.
- In case of earthquake, which could lead to ruptures in certain areas of the distribution system, fire trucks could still access water stored in tanks.
- Wells are not considered a reliable source of water for mechanical reasons, they may collapse due to age, the efficiency and output decrease with time, can be shutdown temporarily or permanently for water quality reasons, and shutdown during maintenance periods could take them out of commission for several weeks.

TECHNICAL / SCIENTIFIC MERIT

Our approach and methods to the Water Reservoir Project will incorporate the experience of the project team to provide functional, reliable, and easy-to-operate pumping water storage facilities. The number one water consultant in the United States, Montgomery Watson Americas Inc., has been retained for the design. This project approach covers three phases of the work; preliminary engineering, final design, and services during construction.

The preliminary engineering effort has addressed various issues and agency requirements pertinent to the design of the pump and storage facility. The preliminary site plan and

pumping station layout has been presented to the City for approval prior to commencement of final design.

The following methodology will be used in the final design to provide the City with functional and proven technology for the well pump, booster pumps, steel tank, and chlorination facility.

- Environmental consideration for site improvements and building architectural design
- Meet requirements for ANSI/AWWA E101 – AWWA for well pump design
- Dosing chlorine to booster pump discharge pipeline, sodium hypochlorite solution for disinfection at new well
- Meet requirements of AWWA D100 for steel tank design
- Use coating systems with cathodic protection system, and steel surface preparation for protection of steel tank from corrosion
- Comply with Hydraulic Institute Pump Standards, and AWWA for booster pump design
- Use cement mortar coated and lined steel pipes for yard piping and transmission main
- Perform soil resistivity tests to determine if cathodic protection for pipelines are needed
- Coordinate with the Orange County Flood Control District, the Regional Water Quality Control Board, and other City departments.
- Plan for traffic control during pipeline construction in accordance with the California Department of Transportation and Cal-OSHA standards for City's Traffic Engineer approval

The services provided during construction are an extension of the design services, and ensure construction work conforms to the requirements of construction contract documents. This is to include the review of contractor's submittals for conformity, along with field inspections by the resident project representative and by technical professionals. In addition, the project manager will develop a quality control plan, which will focus on meeting deadlines, reviewing schedules, and monitoring progress.

The following are the major tasks, schedule, and fees for the Water Reservoir Project.

TASKS	SCHEDULE	FEES
Land Acquisition	complete	1,700,000
Site Rough Grading and Well Surcharge	complete	175,000
Foundation / Geotechnical Design	complete	250,000
Stone Column Installation / Surcharge	Mar-01	1,288,550
Well Drilling	Mar-01	500,000
100% Tanks & Well Design	April-01	975,000
Off-Site Work	May-01	200,000
Specialized Inspection	Aug-01	175,000
Project Award / Tank Construction Begins	Aug / Sep-01	5,900,000
Contingency		436,450
Project Completion	**Dec-02**	**$11,600,000**

Based on the above fee assessment, quarterly expenditures are projected to be approximately $1.5 million per quarter.

MONITORING AND ASSESSMENT PROCEDURES

A quality control plan will be developed by the project manager at the beginning of the project. The plan will first focus on meeting milestone dates; subconsultants work due dates, interdisciplinary review schedules, constructability review schedules, submittal schedules, and permitting requirements. This quality control plan will be reviewed, accepted, and signed-off by our group quality control coordinator and regional group manager, who will be continuously monitoring the progress of the work.

The technical review committee, consisting of senior staff, and the consultant, will be responsible for quality control review of plans and specifications at various stages during design. The design team will rely on the expertise and experience of committee members to obtain an objective point of view and comments on the design and it's constructability. The questions or issues raised by the committee members must be documented, and resolutions will be conveyed back to the committee. Before completion of the final plans and specifications, Montgomery Watson requires that the quality control procedures be strictly followed through by the project manager and be certified in writing to assure that the City's expectations have been met before delivering the plans and specifications to the City for advertisement.

Montgomery Watson utilizes the Integrated Schedule and Budget Monitoring (ISBM) method for its project manager and project engineers to track project progress and expenditures. The manager must track the estimated manpower and budget versus the project progress on a continuing basis throughout the duration of the project.

We can discern any potential schedule delay or budget overrun in the early stages and take necessary corrective actions to keep the project within budget and on schedule. An independent quality control coordinator reviews the ISBM charts on a monthly basis to assure the project proceeds as planned. Explanations and/ or corrective actions are required to be reported to the group manager for deviations from the budgeted cost, project schedule and completion date.

COMMUNITY OUTREACH AND INFORMATION TRANSFER

The City of Westminster has a population of 87,000, and will have a projected population of 110,775 through 2020. According to the latest census information, approximately 15 percent of the City's population live below or at poverty levels. Presently, consumers living in the service delivery area have a median income of $42,000, and a per capita income of $23,000, which is 33 percent and 30 percent less than median and per capita income averages for Orange County. The Water Reservoir Project will benefit consumers living in our disadvantaged areas by maintaining rate structures and passing cost savings directly to consumers.

City Water Department has participated in the Summer Youth Employment Program (SYEP) and the WIA (Workforce Investment Act) program in the past to hire support workers for various projects. The SYEP and WIA programs are run through our City Community Services Department and they accept applicants from local disadvantaged residents that qualify. City Water Department would consider using these programs to hire support workers for the Water Reservoir Project.

Local contractors will be included in the tanks and well equipping bid process. Montgomery Watson will assess all contract bids and provide cost opinions for project consideration. They will identify encroachment permit requirements and contact permitting agencies, including the Orange County Flood Control District, the Regional Water Quality Control Board, and the County and State Department of Health Services. Montgomery Watson staff will meet with the staff of regulatory agencies to discuss permit requirements and construction restraints, if required.

Montgomery Watson staff will conduct monthly meetings throughout the project and report project status to the City. They will submit minutes for each monthly meeting, including information about attendees, key discussion issues and decisions, documents delivered and received, and actions required.

QUALIFICATIONS OF PROJECT MANAGEMENT

The City has retained Montgomery Watson Americas Inc. to oversee and execute the Water Reservoir Project. Montgomery Watson is a global environmental engineering, construction, technology, and management company with headquarters in Pasadena, California. They employ 3,500 employees in 107 offices worldwide and are the number one revenue grossing water consultant in the United States.

The engineering firm's comprehensive range of services include studies, planning, technology development, design, construction management, start up, and operational services. Major areas of business include master planning of water and sewer systems, hydraulic modeling, water treatment and supply, wastewater design and management, industrial and hazardous waste management, solid waste management, laboratory services, dam and reservoir design, coastal engineering, and the design of aquaculture and aquariums.

Since the firm's founding in southern California in 1945, Montgomery Watson has made significant strides toward becoming a world leader in the environmental business. In addition to being at the forefront of water distribution system analysis and technology, Montgomery Watson was one of the first firms to provide computer modeling, beginning in the 1960's. To date they have completed more than 15,000 projects for 3,000 municipal, industrial, and government clients.

The Project Director will be Mr. Ashok K. Dhingra, and the Program Manager will be Mr. William Lu, who together have designed over 95 reservoirs and 20 pumping stations.

Project Director

Ashok K. Dhingra, a registered structural engineer with over 30 years of experience in directing major reservoir, pipeline, and pumping station projects, will serve as the Project Director with the overall responsibility of ensuring the project meets the City's expectations. Mr. Dhingra is a recognized expert in the earthquake resistant design of hydraulic structures, who currently serves on the ACI seismic subcommittee for liquid containing structures and the ACI committee for circular prestressed concrete structures.

Project Manager

William Lu, a registered civil engineer, having over 12 years of experience in the design and construction management of water storage reservoirs, and pumping stations, will serve as the Project Manager. He will be responsible for the execution of all tasks involved in the design and construction phases, with an emphasis on schedule, cost, and quality control. Mr. Lu has designed and provided construction management for over 22 water storage reservoirs from 20,000 to 25 million gallons, 12 pumping stations from 100 to 2,700 horsepower, and a number of pipeline projects, from 8-inch to 96-inch diameters. Mr. Lu's most recently completed projects are the design and construction management of a 6 MG steel tank and a 26,500 gpm booster pumping station in Palmdale, and the design for the equipping of a 3,000 gpm deep well in Fountain Valley. (Resume, see attached Appendix A)

EQUIPPING OF A NEW WELL AND CONSTRUCTION OF A BOOSTER PUMPING STATION, RESERVOIRS AT HOOVER AND HAZARD, AND TRANSMISSION PIPELINES

MAN-HOURS AND FEE ESTIMATE

	Principal Prof II	Principal Prof I	Sup. Prof.	Prof.	Sen Des.	Des.	Res. Eng.	Res. Inspect.	Admin.	Hours	Labor	Sub-consultant	Total ODC*	Total
Preliminary Engineering and Final Design														
Project Management Meetings & QA / QC	200	32	200	120					72	624	$ 85,920		$ 6,050	$ 91,970
Permit and Utilities Research			24	48						72	$ 7,440	$ 400	$ 1,170	$ 8,610
Aerial Surveying				3						3	$ 270	$ 5,700	$ 7,050	$ 7,320
Corrosion Study & CP Design			2	3						5	$ 530	$ 4,100	$ 5,090	$ 5,620
Hydraulic Modeling			16							16	$ 2,080		$ 130	$ 2,210
Preliminary Design Criteria & Memorandum	24	46	96	120	32	80			12	410	$ 44,280	$ 31,100	$ 44,690	$ 88,970
SCADA Integration Metering & Station Automation		36		24					4	64	$ 7,800		$ 540	$ 8,340
Surge Analysis			8	4						12	$ 1,400	$ 6,400	$ 7,990	$ 9,390
Design Drawings & Specifications (71 sheets)	0	240	331	116	340	424	0	0	55	1506	$ 153,540	$ 7,700	$ 43,220	$ 196,760
Permit Applications		16	32	32					4	84	$ 9,680		$ 780	$ 10,460
Contract Documents and Cost Opinions		4	32	40					16	92	$ 9,320		$ 7,670	$ 16,990
Bid Phase Assistance	6	12	32	64			16		8	138	$ 15,160		$ 1,230	$ 16,390
Subtotal	**230**	**386**	**773**	**574**	**372**	**504**	**16**	**0**	**171**	**3026**	**$ 337,420**	**$ 55,400**	**$ 125,610**	**$ 463,030**
Support Services During Construction														
Preconstruction Conference	4		8	12				4	1	29	$ 3,320		$ 280	$ 3,600
Submittal Review		96	206	160	120				120	702	$ 74,540	$ 1,600	$ 10,990	$ 85,530
Contract Documents Interpretation		42	32	80					16	170	$ 18,620		$ 1,430	$ 20,050
Contract Administration	16		338	225					24	603	$ 68,810		$ 6,540	$ 75,350
Change Order Negotiation and Preparation	40	16	72	24	24				12	188	$ 24,990		$ 2,400	$ 27,390
Resident Engineering Services (13 mon.)		16	24				40	2100	112	2292	$ 195,140	$ 9,880	$ 44,520	$ 239,660
Special Inspections (Coating, Welding, and Masonry)										0	$ -	$ 29,310	$ 36,110	$ 36,110
PM and Meetings	120		224	56					26	426	$ 59,720		$ 4,270	$ 63,990
Facility Testing and Startup	8	24	96	24					4	156	$ 20,080		$ 1,500	$ 21,580
Record Drawings				32	12	64				108	$ 8,410		$ 3,350	$ 11,760
Subtotal	**188**	**194**	**1000**	**613**	**156**	**64**	**40**	**2104**	**315**	**4674**	**$ 473,630**	**$ 40,790**	**$ 111,390**	**$ 585,020**
Total	**418**	**580**	**1773**	**1187**	**528**	**568**	**56**	**2104**	**486**	**7700**	**$ 811,050**	**$ 96,190**	**$ 237,000**	**$1,048,050**

* other direct costs include subconsultants, travel, mileage, reproduction and associated costs (fax, copying, telecommunications, freight, and postage).

LABOR COSTS

In executing the preliminary engineering, final design, and support services during construction for the Water Reservoir Project, labor costs will be incurred for project teams, subconsultants, and subcontractors.

Project Team

The project team will consist of the following six members:

- Project Director, Ashok K. Dhingra, registered structural engineer
- Project Manager, William Lu, registered civil engineer
- Project Hydrogeologist, Mathew Hacker, registered geologist

Technical Review Committee

- Phil Gatsoulis, registered structural engineer, Senior Consultant for Montgomery Watson, associated with firm since 1960.
- Mark E. Fordham, registered structural engineer
- Constantino M. Senon, senior staff member, registered mechanical engineer

PROJECT OUTCOMES

The Water Reservoir Project will provide storage for good quality water from any source, 15.8 million gallons through 2020 buildout. The water well, pump house, and associated water lines will increase City's groundwater capacity as follows:

GROUNDWATER SOURCE CAPACITY

Well No.	Current Capacity (af/yr)[1]	Planned Capacity (af/yr)[1]	Comment
1	1,096.8	0	to be replaced by a new well at the Well 107 site (Well 107a[3])
3	1,693	1,693	
4	3,709	3,709	
6	1,613	1,613	
22	564.5	0	to be replaced by a new well at the Well 107 site (Well 107a[3])
75	1,113	3,226	new well (Well 75a[3]) drilled to replace 75, 89a, and Sc-4)
89a	967.8	0	heavy sander, low efficiency, to be taken out of service
99	822.6	822.6	
107	887.2	3,226	new well (Well 107a[3]) to be drilled to replace 1,22,107
SC-4	1,096.8	0	to be replace by a new well, Well 75 site (Well 75a[3])
125	2,903.4	2,903.4	
R-1	3,226	3,226	to be re-equipped to pump to system pressure
R-2	3,709	3,709	
11	0	3,226	new well Water Reservoir Project
Total	**23,403.10**	**27,354.4**	

Note: 1. Flows are assumed available at system pressure

COSTS AND BENEFITS SUMMARY

The benefits of the Water Reservoir Project to CALFED Bay-Delta program objectives are to offer long range cost-effective solutions for water use efficiency and conservation. This will be accomplished by increasing City dependency on groundwater supplies, there-by decreasing dependency on imported water and reducing peak period flow requirements.

Locally, the project will provide for increased operational flexibility and local control of City water supply. Regionally, the project will support the CALFED process to solve the water supply problems of the Northern California Delta region. The Water Reservoir Project will provide a reservoir to store good quality water from any source for multiple use, 15.8 million gallons through 2020 buildout.

Cost saving benefits from taking full advantage of MWD's "Seasonal Storage Program", are estimated to be upwards of $120,000 per year. MWD sells water to the City during the winter season at a lower rate. To be able to participate in the program, City has to enter into an agreement with MWD specifying the normal minimum and maximum volume of water to be obtained during the program period. Water storage tanks will enable water to be taken from MWD lines during the day directly into the system, and at night when demand is low, and will be stored for use the next day. These savings will be passed on to the consumer.

The benefits of the Water Reservoir Project will help City in pursuing water use efficiency, conservation, and coordination, and to implement and evaluate the effectiveness of the Demand Management Measures outlined by the California Urban Water Management Act of 1995. In addition, benefits of the Water Reservoir Project will also help ensure the water system's reliability during drought and catastrophic water supply interruption as follows:

- Problems with well can be overcome by pumping more water into tanks at night during low usage to provide for peak needs the next day
- Using the booster station, the reservoirs will provide the necessary pressure to maintain and provide desired system pressure
- Water in storage tanks will provide a longer detention time for effective chlorination, serve as a sand trap, be mixed in to provide for water that is more uniform in quality, and prolong the useful life of low capacity wells, only using them during sustained peak flow
- Provide the reserve capacity for fire emergencies that is highly recommended by the Insurance Services Offices (ISO)
- In case of earthquake, which could lead to ruptures in certain areas of the distribution system, fire trucks could still access water stored in tanks
- Compensate for wells that may have to be shut down temporarily for water quality

QUANTIFIED COSTS

ITEM	COST	[1]PRESENT VALUE	BENEFICIARY
Land Acquisition	1,700,000	1,700,000	N/A
Site Rough Grading & Well Surcharge	175,000	175,000	N/A
Foundation/ Geotechnical	250,000	250,000	N/A
Stone Column Installation / Surcharge	1,288,550	1,288,550	N/A
Well Drilling	500,000	500,000	N/A
Tanks & Well Design	975,000	975,000	N/A
Off-Site Work	200,000	200,000	N/A
Specialized Inspection	175,000	175,000	N/A
Tank Construction	5,900,000	5,900,000	N/A
Contingency	636,450	436,450	N/A
Labor and Other Direct Costs	1,048,050	1,048,050	N/A
TOTAL		**$12,648,050**	

QUANTIFIED BENEFITS

Property Sale/ Existing Water Sites	1,650,000	1,650,000	City, consumers
Cost Savings of "Seasonal Storage Program" / per year	120,000	120,000	City, consumers
TOTAL		**$1,770,000**	

NON-QUANTIFIED COSTS

(NONE)	N/A	N/A	N/A

NON-QUANTIFIED BENEFITS

Decreased dependence on imported water	N/A	N/A	CALFED
Reduce Peaking Requirements for CALFED Water Supplies	N/A	N/A	CALFED
Reduce Energy Peaking Usage Costs	N/A	N/A	City, consumers
Increased Delivery, Reliability, Flexibility, Quality, and Control	N/A	N/A	CALFED City, consumers

1. Present value of costs and benefits are provided in year 2000 dollars

Y. WILLIAM LU

LICENSE Professional Engineer in Civil Engineering, California (49365)
EDUCATION M.S. in Environmental Engineering, Virginia Tech
B.S. in Chemical Engineering, Tunghai University

Mr. Lu is a Principal Engineer with Montgomery Watson's Southern California Municipal Services Group in Pasadena, California. He has over 14 years of experience in water and wastewater engineering with primary involvement in facility planning, engineering study, design, and construction management of pumping stations, storage reservoirs, pipelines, and treatment plants. He served as the project manager/project engineer on the following projects:

- 6.0 MG clearwell, pumping station, and pipelines for the Palmdale Water District, California
- Westside Reservoir project for the City of South Gate, California
- Equipping of Well No. 12 for the City of Fountain Valley, California
- SAWPA Chino Basin Desalination Program offsite facilities, California
- Predesign of an 18 MGD repurified water pumping station for the City of San Diego, California
- The Anaheim Lake pumping station, Kraemer Basin pumping station, and Miller Basin pumping stations for the Orange County Water District, California
- A 150 hp booster pumping station for the Irvine Ranch Water District, California
- A 200 hp booster pumping station for the City of Pomona, California
- A 7.0 MG water storage reservoir for the City of Santa Maria, California
- Design peer review of the drawings and specifications for the City of Los Angeles Department of Water and Power for the Hollywood water quality improvement project
- Lanpher reservoir cover project for the City of Pittsburgh, Pennsylvania
- Rehabilitation of two reservoirs for the Capistrano Valley Water District
- Evaluation of reservoir alternatives for the Los Angeles Department of Water and Power for the construction of two 10 MG reservoirs
- Rehabilitation of Vinnell Reservoir in San Dimas, California for the Southern California Water Company
- Refurbishment of Reservoir No. 4B for the City of Pomona, California
- Reservoir siting study for the City of Banning, California
- Reservoir storage system evaluation for the Manchester Water Works, Manchester, New Hampshire
- Preliminary planning, preliminary design and design for the Irvine Ranch Water District's Foothill Ranch Zones 6 and 6A reservoirs, pumping station, and pipeline project
- Special focus study on steel tanks and buried concrete reservoirs, ranging in capacity from 2.0 to 20 MG, for the Eastern Municipal Water District
- Massachusetts Water Resource Authority, Boston, Massachusetts, two 12.5 MG prestressed concrete reservoirs with internal fixed baffles
- San Diego County Water Authority, 18 MG flow regulatory structure
- City of Riverside 3 MG University City, 7.5 MG Van Buren, and 10 MG Tilden Reservoirs
- South Montebello Irrigation District Reservoirs No. 1 and No. 2
- City of Torrance, 2.0 MG Elm Avenue Reservoir
- Irvine Ranch Water District Reservoirs 6A and 6
- City of Upland 5 MG and 5.6 MG above ground prestressed concrete reservoirs
- City of Chino 7.0 MG partially buried prestressed concrete reservoir
- City of Pomona 5.5 MG welded steel tank (1989)
- DeBell reclaimed water system project for the City of Burbank, California
- City of Burbank Lockheed B-1/B-199 Reclaimed Water System
- City of Pasadena water reclamation program
- Reclaimed water plan for the City of Torrance, California
- Cucamonga County Water District 4.0 MGD Arthur H. Bridge water treatment plant, Cucamonga, California
- Expansion of the 70 MGD Patapsco wastewater treatment plant, using biological processes for nutrient removal, Baltimore, Maryland
- Facility plan design for the 170 MGD Back River wastewater treatment plant for the City of Baltimore, Maryland
- Upgrading the 11 MGD Dorsey Road water treatment plant lime softening facilities, Glen Burnie, Maryland
- Design of 66-inch Leakin Park transmission main for the City of Baltimore, Maryland
- Design of the Hagerstown-Smithsburg pumping station, Hagerstown, Maryland
- Design of the Plater Street pumping station, Aberdeen, Maryland
- Maryland State Vietnam Veterans Memorial site development, Baltimore, Maryland